THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXXVII. THURSDAY, SEPTEMBER 19, 1867. No. 7.

VACCINAL CICATRICES AND RE-VACCINATION.

By JOEL SEAVERNS, M.D., Roxbury, Mass.

[Communicated for the Boston Medical and Surgical Journal.]

I PROPOSE to show, by extracts from medical authors, that the profession generally believe that vaccine cicatrices have a distinctive character, and that the amount of protection which the system has acquired by vaccination against variola may be pretty correctly estimated by the appearance and number of the cicatrices remaining; and that it is the almost universal opinion of medical men "who know anything of smallpox" (transcendentalists or ultra-theorizers alone being excepted) that a "miserable, flat, white speck or two," which happen to be in the usual locality of vaccinal cicatrices, do not indicate that the system is protected.

If this be so, and this general medical belief be founded on observations and experiments, then it can hardly be considered courteous for any one, especially a leader of medical opinion, arbitrarily and without proof, to declare it wrong, and to assume that his belief and a record of twenty-six cases prove its fallacy.

Supported by Hebra,* whose views doubtless are the basis of the paper by Dr. Cotting, the latter apparently sets at naught all other writers, with their views or facts, some of which I will detail. What, then, is the character of the vaccinal cicatrix?

Condie† speaks of "a cicatrix of a form and size proportioned to the previous inflammation, and marked with radiations and indentations."

Watson‡ says, "the cicatrix which it leaves should be somewhat less than an inch broad, circular, slightly depressed, marked by radiating lines, and dotted with little pits."

Tweedie§ states that a perfect vaccinal scar should be of small size, circular, and marked with radiations and indentations."

* Vol. xxx. New Sydenham Society. Diseases of the Skin, p. 21.
† Condie, "Diseases of Children," p. 506.
‡ Watson, "Principles and Practice of Physic," p. 984.
§ Tweedie, "System of Practical Medicine," vol. on Fevers, p. 408.

Copland* describes it as "a cicatrix which is permanent in after life, is circular, somewhat depressed, striated, and indented with six, eight, or ten minute pits."

Cazenave and Schedel† say, "a depressed, circular, and honeycomb-looking cicatrix remains, with several depressions at its base."

Wood‡ says, "the surface of the scar is characterized by numerous little depressions."

Graily Hewitt§ represents it as "usually circular, radiated, indented, and foveated, having a number of little pits on its surface, a well-defined edge, and generally of considerable size." "Defective scars are comparatively smooth, without indentation, without the little pittings; the edges are irregular and ill defined, and it is often very small."

Flint‖ says the "cicatrix, provided the vesicle have pursued a regular course, and subsequent ulceration have not occurred, is characteristic, presenting a series of depressions or pits," &c.

Aitken¶ states that "good cicatrices are of circular form and pale or white appearance. They are somewhat depressed, and dotted, indented, or foveolated with minute pits or depressions over the base. In some instances there are radiations from the centre. The normal diameter, if produced by a single insertion, is one third of an inch. *Bad* cicatrices are generally all ill-defined, faint, scarcely discernible white patches, especially such as consist of large, flat, ill-defined, shiny marks. A distinct connection subsists between the number and quality of the cicatrices and the protection conferred by vaccination against smallpox; so that it may be confidently stated that that vaccination is the most efficient from which the best and the most cicatrices result."

But the most valuable testimony that we have seen on this point is by M. Denarp Decantaleu, in a "Monographie des Cicatrices de la Vaccine," published at Paris in 1851—a work of the most remarkable toil and industry, comprising the results of the careful examination, and impressions and modellings taken from 5412 vaccinal cicatrices, the distinctive characters of which he shows in a large lithographed plate. He shows that it is the united testimony of MM. Bousquet, Rayer, Hueson, Alibert, and in fact all writers on diseases of the skin, that "les cicatrices vaccinales legitimes ont une forme générale unique, c'est-à-dire, que toutes sont rondes, déprimées, profondes, parsemées de petits enfoncements qui les font paraître comme gaufrèes, et que les petites differences qui existent entre elles consistent seulement dans le l'empreinte plus ou moins marquée qu'elles produisent dans les teguments"; and that "les cicatrices illégitimes auxquelles les fausses vaccines donnent lieu, consistent en

* Copland. "Medical Dictionary," Art. Vaccination, § 13.
† Cazenave and Schedel. Diseases of the Skin. Am. Ed., p. 138.
‡ Wood, "Practice of Medicine," vol. i. p. 407.
§ Graily Hewitt. "Lecture on Vaccination," at St. Mary's Hospital. London Lancet. September, 1863.
‖ Austin Flint. "Principles and Practice of Medicine," p. 781.
¶ Aitken. "Science and Practice of Medicine," vol. i. p. 296.

de simples tâches regulières ou irregulières, et moins étendues que les cicatrices vaccinales légitimes."

And although the monograph shows that each of the distinguishing marks of true vaccinal cicatrices may be modified—that they may be round or oval, above or below the level of the surrounding skin, punctated or honey-combed, with or without rays, from two to seven tenths of an inch in diameter, and more or less pale in color—yet it also shows that on one point pathologists are agreed; that as M. Broschet* has said, "Les cicatrices, quant à leurs formes, et à leur apparence exterieure, meritent d'être studiées avec soin, car elles pouvent servir à réconnaitre les maladies dont le sujet a été affecté. Quel est le praticien qui confondra la cicatrice d'une brulure avec celle d'une solution de continuité par un instrument tranchant, la cicatrice d'un ulcère vénérien avec celle d'un ulcère scrofuleux ou cancereux? Ne sait-on pas que les cicatrices de la vaccine, de la variole, du furoncle . . . . ont des caractères faciles à saisir et à distinguer?"

It being shown that there is a general agreement among vaccinologists as to what constitutes a "good" vaccinal cicatrix, it remains to determine whether the difference between the good and the bad is one of appearance only, or is a true difference in the amount of protection afforded against variola. Fortunately, on this point too, there is abundant testimony. Mr. Granger,† in a paper read before the Royal Medical and Chirurgical Society, 1852, showed among other facts, that of 365 smallpox patients, who had been vaccinated and had cicatrices, ten per cent. died; of sixty-three vaccinated but without cicatrices, 39 per cent. died.

An epidemic of smallpox occurred at Jamaica in 1851, of which Dr. Seaton‡ read an account before the Epidemiological Society. Amongst other facts given by him are the following, prepared by Dr. Bowerbank. Dr. B. attended 301 cases of smallpox, of whom 241 had never been vaccinated, and 18 per cent. died; 58 had been vaccinated, and 2 died; 2 had been inoculated, and 1 died. Of the 58 vaccinated, 34 had good cicatrices, 12 had imperfect cicatrices, and 12 had none.

Of the 34 with good cicatrices, 2 had confluent smallpox,
14 " discrete "
18 " modified "
Of the 12 with imperfect cicatrices, 0 had confluent smallpox,
11 " discrete "
1 " modified "
Of the 12 who had no cicatrices, 3 had confluent smallpox,
9 " discrete "
0 " modified "

* Dictionnaire de Médecine en 18 vol. Tome v. p. 246.
† London Lancet, May, 1852.
‡ Am. Jour. Med. Sci., October, 1855.

Graily Hewitt, in his lecture before quoted, gives the following remarkable facts noted by Mr. Marson. During sixteen years ending with 1851, 3094 vaccinated individuals were admitted into the smallpox hospital:—

There were 1357 persons with one cicatrix.
" " 888 " " two cicatrices.
" " 274 " " three "
" " 268 " " four "

				Mortality per ct.
Of those with one (1357) there were	good,	768	4.23
	indifferent,	589	11.95
" " two (888) " "	good,	608	2.68
	indifferent,	280	7.29
" " three (274) " "	good,	187	1.63
	indifferent,	87	2.32
" " four (268) " "	good,	202	0.99
	indifferent,	66	0.00

Of the vaccinated who had no cicatrices the mortality was 21.73 per cent.

Mr. Hewitt also informs us that Dr. Buchanan, in 1862, examined, in various schools, 15,041 children indiscriminately; 185 of these were scarred with smallpox, one in every 81; 12,860 out of the 15,000 had been vaccinated, and only 12 of these bore the marks of smallpox, and of these 12, 11 had "bad" cicatrices, showing inefficient or spurious vaccination.

A paper by D. Francis Condie was published in the *American Journal of the Medical Sciences* (April, 1865); he gives the result of the observations made by Mr. Simon during twenty-five years in nearly 6000 cases of smallpox after vaccination, viz.:—

Of the vaccinated who had no cicatrix, 22 per cent. died.
" " " one well-marked cicatrix, 4 pr. ct. died.
" " " two " " 3 pr. ct. died.
" " " " slightly developed cic. 7 pr. ct. died.
" " " three well-marked cicatrices, less than 2 per cent. died.
" " " four well-marked cicatrices, less than 1 per cent. died.

In 500 re-vaccinations carefully performed under Dr. Condie's care, 81 reputed to be vaccinated had no cicatrices; 76, small and imperfect ones, and 79 tolerably perfect ones, while 264 had well-defined, perfect scars. Only ten had more than one well-defined cicatrix. Of the 81 first, vaccination succeeded fully in all; of the 76 second, vaccination succeeded fully in 34, and imperfectly in 42. Vaccination of the 79 third was followed by a vesicle more or less imperfect, and a faint, small, irregular areola. In the remaining cases vaccination produced, in a day or two, some inflammation, a slight circumscribed papular elevation, the whole drying, by the tenth or twelfth day, into a small, thin, yellow scab.

We claim, then, that the difference between a good vaccinal cicatrix and a bad one is one of the well-established points in medical science; that vaccination, well performed, leaves behind it, even after the lapse of years, something more than "miserable, flat, white specks," and that no medical man, looking at these imperfect cicatrices, can consider them any evidence that the patient is protected against smallpox. A perfect, round, umbilicated vaccine vesicle does not pass through its various stages to resolution and leave its base marked only by flat, white specks. The question is not alone of the size of the scar, as the learned writer intimates, but of its characteristic appearance. It is not whether a sufficient amount of suppurative inflammation have taken place, or a proper degree of the cutis destroyed, but whether the vaccine disease have been taken and allowed to pass through its regular course. The only means by which a physician can judge of the perfection of a vaccination whose progress he has not watched, is the appearance of its scars. The absolute susceptibility of the person to variola is not under examination, only his susceptibility as affected by his vaccination; and if that be imperfect or spurious, his susceptibility to take variola has not been destroyed; and laying aside any natural insusceptibility to the disease, as not being under discussion, the legitimate conclusion of the experienced physician is, that when the cicatrix is imperfect the vaccination was imperfect, and the protection from contagion equally imperfect.

Re-vaccination has been much studied and discussed, but its necessity depends on two very simple questions, which seem now settled.

First, have we any other absolute way of judging of the amount of protection conferred by the primary vaccination? On this point I need quote only Dr. Cotting, who says that re-vaccination is desirable to ascertain the amount of susceptibility remaining after first trial.

Second, have we any reason to fear that the protective influence of vaccination wears away in time? To induce us to urge the custom of re-vaccination, it is not necessary that we should prove, *nemine contradicente*, that protection by vaccination is but temporary; we need only show that there is good reason to *fear* that such is the case—only to prove that there is "probable cause" to believe it: for the operations of vaccination and re-vaccination are so simple and trivial as a rule, that no one need fear to avail himself of their advantages if there be the least reason for so doing. The statement that "disasters from this source are frequent and damaging," that "severe illness is often thus produced," and "a fatal termination occasionally the result of it"; and that "possibly there have been as many deaths from repeated vaccinations as from varioloid after first vaccinations," needs proof. "Les vaccinophobes," as Trousseau calls them, could hardly go further.

It is true, as Dr. Graily Hewitt* says, "The wound inflicted by vaccination is, like other wounds, liable to be affected by injurious conditions of the surrounding atmosphere. Pyæmia may follow the use of bad lymph; erysipelas has in rare instances been observed. Ordinary care is sufficient to prevent such evils." The case quoted by Dr. Cotting, at the top of page 72, was in all probability such an one; and until that gentleman brings forward tables of cases and lists of mortality occurring in his *own* practice, or that of some other careful vaccinator, who does not use bad lymph or neglect to use ordinary care, it will be unnecessary to devote more than a passing word to this fear.

So little importance is attached to the operation by those who have re-vaccinated many, that it is difficult to find any allusions to it, except in the most incidental manner. Dr. Charles Hogg,† after giving tables of some hundreds of cases, states that during thirty years' practice he has met with "only two cases that have created anything like anxiety," and these recovered in a few days by rest and a cooling lotion.

Trousseau‡ gives the statement of M. Gintrac, an extensive re-vaccinator, that, "les re-vaccinations pratiquées dans le foyer épidémique contrairement aux craintes exprimées par quelques médecins, se sont montrées d'une complète innocuité."

M. Laure,§ a surgeon of the French Navy, in giving the results of re-vaccination as ordered in that service, says that "the local phenomena in re-vaccination are not remarkable, provided the men on whom true or false pustules appear are exempted from any duty on the fifth day. The constitutional effects are unimportant."

In the autumn of 1864, two cases of smallpox occurring in the garrison where I was stationed, I vaccinated all the troops and many of the prisoners there, several hundreds in all. In almost all more or less specific local inflammation followed, but in none was this of a serious character. A few were excused for some days from mounting guard or going through with the manual of arms; not one required admission to the hospital. No other case of smallpox followed.

But, passing by these supposed dangers, let us return to the question, "Is there any reason to fear that the protective effect of primary vaccination *may* wear away?" Of this there can be no doubt, if we attach any value to the testimony of many observers, who have carefully collected and published the results of experiments. We should naturally expect this to be case from the analogy of other diseases. If varicella, measles and all other exanthemata sometimes recur, why not vaccinia? Hebra‖ says that measles may occur more than once in the same person, and that smallpox may also; *a*

* London Lancet, September, 1853.
† Ibid, September, 1863.
‡ Clinique Médicale, vol. i. p. 120.
§ London Lancet, June, 1859.
‖ Diseases of the Skin (New Sydenham Society, vol. xxx.), p. 184.

fortiori, then, should he expect vaccinia to do so, which is, he says, identical with variola, but modified and made milder by passing through the cow.

At any rate we should have judged that any one was precluded from denying it, who acknowledges the fact of measles occurring twice in six weeks. If medical testimony in this case (as in that of the contagiousness of cholera) has not given overwhelming proof, it is certainly much safer, in view of all possible contingencies, to *act* as if it had.

We quote a few from the authorities with which one might fill volumes on this subject. Dr. Horatio Adams, of Waltham, in his discourse* before the Massachusetts Medical Society (1858), quoted by Dr. C., says:—"In order that we may be sure that the susceptibility (to receive smallpox) is extinguished, vaccination should be repeated as long as it produces any specific effect; especially should it always be repeated when the first operation has been performed at an early age, during dentition, or when disease of any kind or a diseased diathesis existed. It would be well always to re-vaccinate all who may at any time be directly exposed to smallpox."

Dr. Gregory,† in a paper read before the Royal Medical and Chirurgical Society, states that the records of the Smallpox Hospital in London show that "in eleven years, 4092 persons having smallpox have been admitted, of whom 2168 had been vaccinated. The majority were of adult age, a few between nine and fifteen, but below nine scarcely any vaccinated person was admitted—making it appear that the susceptibility to the variolous miasm among vaccinated persons increases as life advances."

M. Laure‡ arrived at the following among other conclusions:—The practice of re-vaccination is not, as might be supposed, useless; it is, on the contrary, a very important hygienic measure, the execution of which should be carefully watched. People who have had the smallpox should be re-vaccinated as well as those who have been subject to the cowpox inoculation.

In re-vaccinations made at the prisons in Belgium in 1859, as reported to the Academy of Medicine at Brussels by M. Vleminx,§ it seems that of 1660 subjects, 16 per cent. were successful; that M. V. found that re-vaccination succeeded better the more distant the time of the operation was from the original vaccination, or from an attack of smallpox.

Dr. Charles Hogg‖ shows by tables from Dr. Commenge, of Paris, that from ten years old and upward re-vaccination is important and necessary; that, generally speaking, the effect of the first vaccination is lost after the twenty-fifth year, in many people after the fifteenth, and that, in fact, all persons, not excepting those who have had smallpox, should be re-vaccinated.

---

* Medical Communications of the Massachusetts Medical Society, 1858, p. 253.
† London Lancet, May, 1852.
‡ Ibid, June, 1859.
§ Ibid, January, 1859.
‖ Ibid, September, 1863.

Graily Hewitt, before quoted, says:—"It would appear that, after the lapse of a certain number of years, the protective power of vaccination has a tendency, more marked in some individuals than in others, to wear out, and a resusceptibility to smallpox arises. The impression has been for several years past gaining ground that re-vaccination is proper and even necessary once or more in the life of an individual. Mr. Marson states that during seventeen years not a single servant or nurse belonging to the smallpox hospital has taken smallpox, and the universal custom has been to re-vaccinate the servants, nurses and attendants in or about the hospital on entering on their employment at this institution."

"Re-vaccination should be performed at the age of puberty, and perhaps again at the age of twenty-five or thirty, and it is desirable to re-vaccinate at other ages than these during epidemics of smallpox, and especially in the case of individuals likely to come into contact with smallpox patients."

Dr. Condie says:—"In view of the many accidents that may render vaccination unsuccessful or only partially successful, the propriety, if not the absolute necessity, of re-vaccination demands the earnest consideration of every practitioner. The examination of a very extended series of well-authenticated statistics has convinced me that in many cases the protection of primary vaccination is but temporary, and can be rendered permanent only by a second, or in some instances by repeated re-vaccinations, and that in all cases without exception vaccination should be repeated after a proper interval, to insure the complete infection of the system—to endue it with the due amount of protection against the variolous poison.

Tweedie, in his work on Eruptive Fevers,* declares it "impossible to conceal the apparent conclusion that time lessens the power of resistance to the variolous germ."

Austin Flint† expresses himself on this point thus:—"The protective influence of vaccination diminishes after the lapse of a certain number of years. With our present knowledge, the propriety if not the importance of re-vaccinating every five years is to be advocated. Re-vaccination, in fact, is always proper as the readiest and safest test of unsusceptibility to smallpox."

William Aitken‡ announces that "from the evidence contained in the bills of mortality of 1825, from the experience of epidemics of smallpox in France and Italy in 1826, 1827 and 1829, from the experience of the epidemics of smallpox in Ceylon in 1833 and 1834, and from the admissions into the London Smallpox Hospital in 1838, it has been rendered obvious that the susceptibility to smallpox, which in vaccinated persons is destroyed for some years, returns with advancing life, and becomes greater as life advances."

Farther on,§ he speaks of re-vaccination as "a most necessary

* System of Pract. Med., vol. iv. p. 408.
† Princ. and Pract. of Med., p. 782.
‡ Sci. and Pract. of Med., vol. i. p. 288.
§ P. 289, op. cit.

supplemental measure to vaccination. A large reduction in mortality and in the occurrence of smallpox can be shown to have taken place from the practice of *re*-vaccination so as to leave no doubt of its practical efficacy." "In 1833, between 40,000 and 50,000 adults were *re-vaccinated* in the Prussian army, and in about 33 per cent. of the number it took with perfect success. Amongst Russian soldiers at Kasan the rate of perfect success was about 18 per cent. In the army of Denmark, from 1843 to 1847, nearly 20,000 *re*-vaccinations were practised, of which more than a half were attended with *perfect* success, and more than a quarter with *modified* success. Since 1843, re-vaccination has been compulsory in the Bavarian army. From that date till 1857, not even a single case of unmodified smallpox has occurred, nor a single death from smallpox. Similar good results have followed the institution of re-vaccination in the Danish army, the army of Sweden, of Baden, and in the British army also." In the latter a departmental order was issued in 1858, and is still in force, that every recruit on joining the headquarters or depot of the corps or regiment to which he belongs, shall be vaccinated, even if he have marks of smallpox or previous vaccination.

Trousseau* confirms our view thus:—"En definitive, le vaccin tel qu'il est aujourd-hui, ne procurant plus, chez bien des individus, qu' une immunité temporaire au lieu de l'immunité absolue qu'il semblait avoir au commencement de ce siècle, il est nécessaire de récourir à une pratique depuis long-temps preconisée, celle des re-vaccinations."

To show its benefits, he quotes extracts from a paper in the *Gazette des Hôpitaux*, July 11, 1867, narrating the rise and progress of an epidemic of variola in a commune of France, and the different degrees of its severity among the vaccinated show that the gravity of the cases was in direct proportion to the length of time which had elapsed since their vaccination, and concludes with the following:—"La re-vaccination, pratiquée d'une manière générale en pleine épidemic, en a arrêtée d'emblée les ravages, et éteint le dévelopment: elle a préservé indubitablement, et ceux-là même qui se trouvaient deja sous l'influence d'une incubation variolique ont paru jouir d'un certain degré d'immunité."

He finds that of 44,000 re-vaccinations, 20,000 succeeded perfectly (nearly half), 9000 imperfectly, and 15,000 produced only a temporary local redness of the skin, lasting from twenty-four to thirty-six hours. "Me fondant," says the distinguished lecturer, "sur les faits que j'ai signal s, je conseille généralement de re-vacciner autant que possible tous les cinq ans. Si cette practice est inutile, quels inconvénients presente t'elle?"

Having thus made it clear that the opinion prevails strongly among the profession that the protective influence of vaccinia *is* or at least *may* be impaired by time, and that in view of this every physician should (in accordance with his professional duty to arrest the pro-

* Clinique Médicale, vol. i. p. 117 et seq.

gress of disease) proffer and if necessary urge re-vaccination, especially after exposure to variola, we have but a few additional words to say with regard to Dr. Cotting's cases and comments.

His table shows, if a table of twenty-six cases can be said to show anything, where tables of thousands of cases can be readily referred to, that almost all persons, who have been vaccinated but once, are liable to take modified smallpox—that those re-vaccinated do not. It proves nothing with regard to the value of distinctive cicatrices, since the writer's belief on the subject prevented him from noting the distinguishing marks of the cicatrices, taking account of their size only. It shows that he allowed six patients in one family, two in a second, and seven in a third, to take variola from a first case, without using any exertion to prevent it, and it is not wonderful under those circumstances that he should be a little sensitive with regard to "denunciation." It is true that "re-vaccination was declined" by these unfortunates, but it can hardly be supposed to have been urged upon them by one who holds it in such dread.

It is all very well for the parties concerned to be now "abundantly satisfied with the result," and for their physician to congratulate himself on the trivial character of the sickness he did nothing to stamp out; but one fact should not go unnoticed, which is that each of these patients constituted a *foyer* for infection for the neighbors about and the community in general, and that each of them, though suffering but little and having but half a dozen pustules, may have been the direct cause of cases of confluent smallpox; so that "it is possible" that more deaths may have been the ultimate result of this *laissez faire* treatment that would have followed even from re-vaccination.

Re-vaccination, then, is important, not only "to ascertain the amount of susceptibility remaining after first trial," but also to give additional protection to those persons whose original vaccinia may have been annulled by time, or at least to obviate the danger that it *may* have been thus destroyed, and that we may leave nothing undone to lessen the liability to variolous disease. "Ne doit-on pas," says Trousseau, "chercher à multiplier les chances d'immunité contre la variole, et même contre la varioloide, qui, toute bénigne qu'elle soit, dans la majeure partie des cas, n'en pas moins grave exceptionellement, ainsi que j'ai eu soin de le dire, en faisant son histoire?"

THE HYGRODEIK AND THE PROPER MEANS OF HYDRATING OUR HOUSES AND HALLS OF ASSEMBLY.

[Report to the Suffolk District Medical Society.—Concluded from page 127.]

DURING cold weather, when a room is heated by a stove or a hot-air furnace, many persons experience a painful sensation in the chest, produced by the excessive dryness of the air, consequent upon rais-

ing that possessing only the amount of moisture due to thirty-two degrees, to the temperature of seventy degrees. This unpleasant feeling, which is often confounded with too great heat, is frequently relieved by placing a vessel of water *upon the stove or in the furnace*, but it is rare that the quantity thus evaporated is sufficient to give the necessary moisture.

Before we proceed to the methods to be used to obtain sufficient moisture, we will merely state that evaporation produces electricity. At sunrise the atmospheric electricity is feeble, but increases during the forenoon, as the vapors collect in the lower regions of the atmosphere. About noon the tension attains its maximum, when the air contains the greatest amount of vapor. Immediately after reaching the maximum, the electricity diminishes at first rapidly, then more slowly. As this proceeds the visible vapor disappears, and the atmosphere becomes clear. At two o'clock in the afternoon, the atmospheric electricity is scarcely stronger than at sunrise; it continues to diminish till two hours before sunset, about which time it begins to advance and attain a second maximum an hour and a half or two hours after sunset. During this time vapors have formed low in the air, and the night-dew has fallen. There is a manifest connection, in time at least, between the presence of vapor and the development of electricity. That there is a connection between our feelings and the state of the atmosphere we cannot doubt. When the air is clear and electricity rapidly developed, we are especially comfortable.

The required moisture may be obtained by direct evaporation, and by water thrown in spray from a delicately constructed tube with minute apertures, or by the well-known atomizing tubes.

In ventilating the House of Commons when it was crowded, the air furnished was exposed to 5,000 feet of evaporating surface, and subsequently made to flow through jets of water.—(Dr. Reid.)

In the testimony given in Washington by Dr. Antisell, it was stated that sprays of water at the ordinary temperature, or slightly increased, thrown at right angles to the currents of air, would be the most effective. If thrown directly against the current, it would too much impede its force and require too great power to overcome it. Passing at right angles is the natural mode by which the air is moistened. Many a shower falls above which never reaches the ground, thus showing that sprays of water are absorbed by the air.

For many years a vague idea has passed through the public mind, that every stove and furnace requires a vessel containing a certain amount of water. If this was used with its pitcher full of water daily, every thing was well and the world satisfied. We now know that something more than a ewer full is requisite to bring our houses into a daily normal state of temperature, and that none of the popular methods of supply of water are sufficient. Many people think, and undoubtedly correctly, that their houses are pleasanter owing to the use of vessels supposed to be porous or otherwise, which are

swung in the flues just under the registers opening into the entries and rooms. These vessels are to a certain extent of use, for they do furnish moisture, but to a minimum amount only. At the distance at which they are situated from the heated surface, they cannot be supplied with air at its most expanded state. During its passage from the radiator to the water-jar, a distance of eight to twenty feet, it to a certain extent cools, and to an equal extent loses its capacity for taking up moisture. These jars again, if of a size to expose any amount of surface to the water, must of necessity block up the passage of the flue, check the rapidity of ascent of heated air, and drive it back. They catch the dust and dirt of the register, and require frequent cleaning, or their porosity is impaired. The inconvenience of filling them daily, and several in each house, requires only this mention.

The Committee have examined most of the furnaces offered to the trade in this city. They find them all in a greater or less degree inadequately furnished with means of hydration. The majority of makers are contented with a small vessel either narrow and deep, or better square, of varying size according to the magnitude of the furnace, holding from two quarts to two gallons, attached to the lower portion of the radiating surface of furnace, or propped with one of its sides against the fire-pot. In this position the vessel is exposed to the cold air as it rushes in, but only to a very small percentage of the heated air. According to some of our furnace makers, a large furnace with a two quart vessel will have all the moisture furnished to the heated air that is requisite for twenty-four hours.

Other makers have more wisely placed the hydrating vessel on the top of the radiator, in the upper part of the air chamber. Though they have selected the right place, their vessels are too small, and will not answer the purpose required. This place is assuredly the most fitting for the location of the vessel holding water. The top of the radiator offers a considerable extent of surface of heated iron on which a large shallow pan can be placed. The bottom of the pan being readily affected by the transmitted heat, the water it contains will be expanded and be enabled more readily to pass into the heated air. The air in this portion of the furnace having passed over all the radiating surface is in its most expanded state, most ready and eager to take up moisture, and more heated air of course in this, the top of the furnace, must come in contact with the exposed water than in any other position.

A number of arrangements for adding moisture to the heated air in furnaces have been presented to the Committee, and they offer the following rough sketches of the apparatus. Plan No. 2 consists of a hollow belt or band placed in the furnace supported by the fire-pot. This is fed with water by a reservoir on outside of furnace, regulated with a ball cock. The belt is provided with a safety valve. A tube passes from this belt through the top of furnace, and in the

hot air chamber divides into as many atomizing points as there are flues. Instead of one tube, any number of tubes equalling the number of flues may pass up together, each one terminating in the atomizing point. Around this tube or series of tubes, in the air chamber, is a pan supplied with water by another external reservoir with ball cock regulator; from it the requisite number of atomizing branches spring, meeting the tips of the main tube or tubes. These are so placed that the spray is thrown directly into each flue.

Plan 3 consists of a cast iron box made in the form of steps, extending from the pot up to the top of the furnace. The water supplied by an external reservoir drops from step to step until vaporized, the amount furnished being regulated by a screw, the steps affording a greater amount of evaporating surface. The vapor escapes from a tube at the top of the opening into the hot air chamber; at the bottom of the box is an escape pipe for any overflow of water. This was planned by Mr. Lowe, the maker of the Hygrodeik; has been in constant use during the past winter in the stove which heats his work room in this city, and has given entire satisfaction. An atomizer can be readily made to be used with this apparatus, thus throwing spray into the flues themselves.

There are many and serious objections to these atomizing apparatus. The expense will be large—the arrangement complicated. The furnace is tapped in three (3) places in one method, in two (2) in the others. There is great chance for an escape of gas, as the furnace and tubing will expand unequally. The tubes and atomizing points will readily become clogged or get out of working order, and not the least is the liability of an explosion.

Plan 1 consists of a furnace whose radiator is made with a flattened dome top; on it rests a very large but shallow pan, of iron or other metal galvanized or lined with porcelain, enamelled; an earthen pan may be used, but is objectionable from its fragility; pans so prepared will not cause smell. This pan may be fed from an external reservoir with ball cock regulator. The tubing connecting the evaporating pan and this reservoir has a shut-off which may prevent all flow of water. That this arrangement should furnish sufficient moisture seems certainly reasonable, even if it had not been tried. The Committee know of a similar arrangement, where, however, the amount of water let on was not controlled by any shut-off, which has been used in a large, well-built country house, occupied by a gentleman well known to the Society of Natural History of this city. He introduced this arrangement to his furnace; the moisture supply was so great that he gave it up, thinking that it made his house uncomfortably humid. One large room in which his cabinets were placed, had been closed for some days during very cold winter weather. Having work to do with his collection, he opened the register leading into this room, and immediately found that part of it occupied by a

good sized snow-storm. Thinking if the room was left, everything soon would be satisfactory, the door was closed; returning in a short time he was disagreebly surprised to find cabinets, walls, wainscot and carpet covered with quite a deposit of ice. He was thoroughly convinced of the hydrating powers of the furnace.

This arrangement seems the best for many reasons: it is entirely outside of and unconnected with the radiator, is perfectly safe, very easily managed, not liable to get out of order, no gas can escape from its use, nor is its expense great. The controller in the tube will prevent any excess of moisture. It may be simplified by placing the ball and cock in the pan itself, if it is made sufficiently deep; in this case the controller will be in the feed pipe. This controller may be under the care of the person who has the charge of the furnace fire. Or the following ingenious arrangement, planned by Mr. Farmer, of this city, will be very useful in large public buildings, or even in private houses.

Mr. Farmer says, "You are well aware that in a thermo-electric battery, the force of the current excited depends upon the difference of temperature maintained between the two opposite ends of the pairs, and that by the aggregation of many pairs, electric effects of any desired amount may be attained.

The ordinary application of a wet cloth to one end of the thermo-battery serves by the evaporation of the water to maintain a difference of temperature between the two ends, and this difference of temperature will be the greater, the less the amount of moisture in the atmosphere at any given time. Now as it is desirable that the actual temperature of a living room be maintained at a tolerably constant degree, it is clear that if this be done any perceptible diminution of the usual amount of moisture will be attended with increased evaporation, causing lowering of temperature at the moist end of the thermo-battery, and of course increased electric activity, which may be caused to open a supply of moisture to the evaporator, which will continue until the usual normal amount of moisture is restored, when the supply will cease.

By this means a constant equable supply of moisture might be furnished, and be under a self-regulating arrangement.

It is a matter of great importance that any plans taken to increase the means of hydration should be such that they may readily be adapted to the furnaces now in use in our houses. We think the plan No. 1 may be very easily adapted to all furnaces, whether portable or not. In all the portable furnaces the upper part of the casing which forms the hot air chamber, may be increased in height, if there is not sufficient space already for the evaporating pan. The pan may then be introduced; the expense cannot be very great, nor the change one of great labor. In furnaces surrounded with brick, some of the courses of brick may be tapped, a pan introduced, the opening again bricked up, leaving merely the passage for the feeding tube,

and the required change is complete. This certainly may be considered as feasible as it is simple.

A diagram has been furnished the Committee representing a section of a furnace imagined by Dr. J. McLean Hayward, which presents certain novelties.

The hot air chamber is in the interior of the furnace, instead of being on the outside of a radiator. He makes it, as seen, to consist of a large globe opening into a domed box of zinc. Air enters the globe cold from outside by the air box. This heated by the fire below and rising, causes the propeller at neck of globe to revolve; the propeller turns a perforated shaft, ending in arms whose extremities are pierced with minute openings; the upper end of shaft connects with a spreading funnel receiving water from a feed pipe. As the fire grows more intense, the air in globe, heated and rising more rapidly, causes the propeller to revolve with increased speed; the arms are driven round, and throw out water in fine minute spray, filling upper part of air chamber, and readily carried on with the heated air in the flues.

Bibliographical Notices.

Idiocy and its Treatment by the Physiological Method. By EDWARD SEGUIN, M.D. New York: William Wood & Co.

THIS book we have found very complete, instructive, and interesting. Its author being a native of France, some Gallicisms have crept into the text, but not to the extent of obscuring the meaning.

The preface begins with the remark that "twenty years have passed away since the publication of any treatise on the treatment of idiots." But, a foot-note qualifies this statement by saying, that while the work was going through the press, the treatises of Drs. Down, Duncan, and Willard, made their appearance.

An "introduction" traces "the origin of the methodical treatment of idiots and their congeners," and presents "the philosophical history of the idea of training the functions, and all the faculties as functions (instead of only instructing children), from its germination to its maturation in the school for idiots, and to its actual fitness for the training of all children."

The body of the work is divided into five "parts." The first part is devoted to a description of idiocy, which the author defines as "a specific infirmity of the cranio-spinal axis, produced by deficiency of nutrition in utero and in neo-nati." The definitions, he says, are numerous, but his own, "if objectionable, will be found at least to correspond to a plan of treatment, both supporting each other; and may suffice until a better definition and a better treatment can be devised."

Part II. describes a system of physiological education, beginning with that of the physical functions; then treating of the teaching of speech; and finally setting forth a mode of training the more purely intellectual operations. Part III. deals with the Moral Treatment, at

the foundation of which is the acquiring of authority. Part IV. describes what a public institution for idiots should be, its construction, arrangement, internal economy. Part V. consists of an Appendix.

Twenty-fifth Annual Report of the New Hampshire Asylum for the Insane at Concord, June, 1867.

This asylum is managed by a Board of Visitors reporting yearly to the Honorable Senate and House of Representatives, a Board of Trustees reporting to the same body, and a Superintendent reporting to the Trustees.

In May the Board of Visitors made a careful examination of the asylum, and report a highly satisfactory state of affairs, both in doors and out. The patients are made as comfortable as their several conditions will admit, and the institution is ably and economically managed. The Legislature directs the application of the appropriation for indigent patients, and the income from the gift of the late Moody Kent, Esq., amounting to some nine thousand dollars a year, is, in part, devoted to the same object.

The Trustees report the new cottage, designed for the accommodation of the more excited women, in process of erection, with the prospect of occupancy at the close of the present year. When completed it will add thirty-three new rooms, and obviate many serious inconveniences which have been for a long time experienced.

The decease, during the past year, of the Hon. Charles H. Peaslee and the Hon. John Preston, devoted members of the Board of Trustees for many years, *both* active and influential in the affairs of the asylum—the former from the beginning and the latter since 1856—is appropriately mentioned.

From the report of the Superintendent, Dr. J. P. Bancroft, we learn that the number of patients in the asylum May 1, 1866, was 236—111 males and 125 females. There were admitted during the year 117—63 males and 54 females. The removals of all descriptions were 107—45 of each sex being discharged, and 17—7 males and 10 females—having died; leaving in the asylum May 1st, 1867, 246—122 males and 124 females.

Of those discharged, 39—18 males and 21 females—had recovered; 24—13 males and 11 females—were more or less improved, and 27—14 males and 13 females—were not improved. Eleven of those "improved" were fit for regular and responsible employment. Of those called "unimproved," fifteen were taken to other residences, either private or almshouses, to diminish the expense of support. Some, in whom there was little expectation of improvement, were taken to their homes in such condition they could be cared for by their friends.

The immediate causes of death in the seventeen who died were: exhaustion, from acute mania, three; from long-continued mania, four; chronic abscess, structural disease of the brain, general paralysis, marasmus, pulmonary consumption, pneumonia and epilepsy, each one; the decay of old age, two; and suicide by hanging, one.

With a larger number of patients in the house than ever before, the mortality has been less than for several years. No serious sickness has prevailed. The high standard of health is attributed, in part, to

the general healthy state of the neighborhood, but more to the increased amount of time devoted to out-door exercise and amusements.

The Doctor remarks, "that each year does something to remove the false and superstitious fancies formerly entertained in regard to insanity, and to place *this disease* in the same relation as others, to scientific examination and remedies. The peculiarity of the remedial measures is in this, that while the medical treatment (which is not peculiar) is in progress, a combination of influences, not necessary in ordinary diseases, is called for, to put the disturbed mind in an attitude most favorable to relief. To inaugurate and support these influences, is the distinguishing work of an asylum." "Healthful, varied and pleasant occupation, riding, boating, labor on the farm, and walking in the grounds and surrounding country for out-door exercise; while in-doors, cue alleys and bagatelle tables, social entertainments, lectures, concerts, dancing, charades, tableaux, and rhetorical and dramatical exhibitions, prove beneficial stimulants to the mental powers of the convalescent, and real tonics to many minds long in a state of apparent chronic torpor." "To suppose that the felicitous expression of thought and feeling, eloquence, wit, music, beauty, or whatever interests, instructs or pleases the mind in health, would be wasted on the population of an asylum for the insane, is simply to be ignorant of facts."

C. K. B.

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY CHARLES D. HOMANS, M.D., SECRETARY.

AUG. 26TH.—*Case in which Abortion was artificially induced, on account of excessive Nausea and Vomiting of Pregnancy.*—Dr. MINOT reported the case.

The patient is a married lady, 35 years old, in good health previously to her present illness, rather stout, and of a nervous temperament. She has two children, the youngest about three years old. During her second pregnancy she suffered for a short time from excessive nausea and vomiting, which were relieved, apparently, by the application of morphia to a blistered surface, after other means had failed. She became pregnant for the third time about the middle of April last, and in a few weeks began to have much nausea and vomiting. By the end of May the latter became uncontrollable; scarcely anything was retained on the stomach, and she could only be nourished by enemata of beef tea, which were given about once in four hours. The patient became much emaciated, so that her rings dropped from her fingers. She was very despondent. The pulse was very rapid, and after five weeks of incessant vomiting, the exhaustion was so great, that it was feared she might sink unless abortion was induced. Dr. Putnam, who saw the patient in consultation, coincided in this opinion, and a sponge tent was introduced into the cervix uteri, July 7th, another on the 8th, and a third on the 9th. About midnight of the 10th labor came on, and the ovum was expelled at 7, A.M. The vomiting then ceased, but the patient remained in a state of much

prostration, with inability to sleep for several days, from which she slowly recovered, and is now convalescent, though by no means well.

The following remedies were employed in this case: externally morphia was applied on a blistered surface, over the stomach;—this gave no relief. Sinapisms and chloroform were also applied, with very little benefit. Ice to the spine, and also to the epigastrium, in Chapman's ice bags, gave some relief for a time, but the patient soon got tired of it. A strong ethereal tincture of iodine (two drachms to the ounce) was freely painted over the os and cervix uteri and upper part of the vagina, on three occasions, but no essential relief followed. The solid nitrate of silver was also applied to the os and within the cervix, with like result. As the patient had suffered from leucorrhœa since the beginning of pregnancy, much was hoped from these applications, although no disease was visible about the os or cervix. The internal remedies were chloroform, which for a time was of some use; bromide of potassium, iced drinks, brandy, champagne, cold tea, &c. But the subcutaneous injection of morphine gave very great temporary relief, and enabled the patient to sleep several hours at night. Dr. M. thought that without it she could hardly have lived. Large doses were required, upwards of three grains being sometimes given in twenty-four hours, and it was continued for several weeks without interruption.

Dr. M. remarked that out of several cases of severe and obstinate vomiting of pregnancy which he had seen, this was the first in which he had felt compelled to bring on abortion in order to save the patient's life.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, SEPTEMBER 19, 1867.

MARRIAGE IN AMERICA.

The subject of Marriage in America has been treated of in a book by M. Carlier, of Paris, who has found an excellent translator in our *confrère*, Dr. B. Joy Jeffries. It is not our purpose to give a bibliographical notice here, except incidentally, but to consider some of the topics discussed in the monograph. If it be asked what place the subject has in a medical journal, we reply, that there are some points connected with it to which public attention needs to be directed, and upon which public opinion requires to be enlightened; and that our profession is as much concerned in summoning the one and forming the other, as any class in the community. But, there is a more weighty reason. In our daily walks it comes in our way to be cognizant of the matter more frequently and more familiarly than falls to the lot of any other calling. It is for us to ascertain and advise as to the marriageable age, and it belongs to us most especially to know many of the secret difficulties, errors and evils appertaining to the married state. In Protestant society we are the repositories of family secrets, far more than are the clerical counsellors. Furthermore, the discussion of the social evil, so called *par excellence*, and of the poisoning of health, which flows from it in so

many foul streams, has been left chiefly in our hands. And we are satisfied that no radical or permanently effectual measures can be devised to stem the progress of that evil, save the re-instating or the establishment of the sexual relation on the highest plane, and in the form pointed out by the Christian code.

The instincts of the lower animals provide for the procreation of species by more or less promiscuous copulation, though that function is measurably restricted among the higher orders by habits of pairing or mating. To civilized man it is given to make choice of concubinage with its multiform evils, or of that permanent union of male with female, without which the life and the destiny of either is incomplete. As that union—or marriage—is the foundation of society, its aberrations may well be watched over, and should not in any country be neglected, though pointed out by the pen of a foreigner.

We suppose marriage to be an end in itself, and its primary object to be its own consummation—the reciprocity or the blending of the masculine and feminine elements of humanity in the partnership of the conjugal tie. But, as for the State, the principal purpose of the institution is the procreation and proper nurture of the rising population. This point is but briefly touched by M. Carlier. He acknowledges that the increase of population, independently even of immigration, is more rapid in this country than it is in his own. He however quotes from Tucker on the "Progress of the United States in Population and Wealth in fifty Years," to show that that increase has fallen off in each of the successive decades from 1790 to 1850. In France, where the subject is one of alarm to the economists, the comparatively slow multiplication of the species, he suggests, may be owing to the great increase of celibacy, and of the "transference of the habits of celibacy to marriage." In this country, also, among the causes given for the proportional decrease, are prudence and pride, which are proportional to the development of cities and the wealthy classes inhabiting them. Another cause is the rapid burning out of vitality produced by our climate and manners. But we do not doubt that a motive to the avoidance of conception is found in artificial wants and expensive habits of living, and that the motive is widely acted upon. To know the remedy is in this matter easier than to put it in operation. That remedy is, "to improve morality and render life more simple." When, among our progenitors here, the bringing up of a family was not such a serious pecuniary matter as it is now, and where, as in certain agricultural regions, children are rather a help than a burden, large families were and are not uncommon. In a certain sense, money seems to be the root of the evil. A couple possessed of a "handsome," though not unlimited property, must, with a numerous offspring, sacrifice luxury, and come down to a plain style of living. On coming of age it is difficult for the sons to provide themselves with lucrative employment, and for the daughters to obtain wealthy establishments. On the demise of the parents, the patrimony will not bear much subdivision without reducing the share of each heir to a comparatively small pittance. The same principle prevails as we descend in the social scale, till the alternative becomes one between comfort and poverty. Hence an avoidance of marriage, and of its natural fruits. Selfishness is not yet eradicated from men and women, as we find them.

In France, the young girl is sheltered under the wing of her mother until transferred to a husband, who has usually been selected for her, from considera-

tions of position, and with whom she is no longer under tutelage. In fact, it is then that her independence begins. The French law accordingly surrounds marriage with strict formalities and conditions of parental consent. In the United States, on the contrary, the young unmarried female enjoys the utmost freedom, amounting often to license. And, our laws greatly simplify and facilitate marriage—M. Carlier seems to think, too much so. But, we feel sure that one can hardly have a long experience in our profession, here, without being convinced that, manners remaining as they now are, no increased restrictions should be put upon the legal union of male and female.

While M. Carlier acknowledges that the French girl is kept too closely and too long under maternal vigilance, we may, on the other hand, deprecate the partial orphanage of the mother's guidance which too often occurs here. Between the two extremes we may well advocate the golden mean. That secured, however, we hardly think that even then the cause of morality would be subserved by placing impediments in the way of wedlock.

But, the question which at present transcends all others in relation to marriage in this country is that of divorce. The frequency with which, and the trivial causes for which this measure is resorted to, show an alarmingly low estimate of the sacredness of an institution which should be regarded as a *sacrament*, if anything merits that name. The public sentiment in certain States, as manifested and incorporated into laws which make divorce a slight matter, loosens the conjugal tie in all respects, and implies moral degeneracy, in the past and present as a cause of that sentiment, and in the future as a deplorable and increasing consequence of it. Nor is the evil confined to the States referred to, so long as public opinion in other Commonwealths allow the citizens of the latter to take advantage of the easy legislation of the former. Orphanage and disgrace should never be inflicted upon irresponsible offspring, save in case of dire necessity. And it should be remembered that in proportion as the ideas of a community become lax as to the sanctity of the marriage relation, by just so much are the restraints of illicit passion weakened, whether its object be pledged to fidelity at the altar, or bound only by personal chastity or self-respect. We know of no more important enterprise which the three learned professions might appropriately join in promoting, than one against the evil in question, striking, as it does, at the foundations of morality and good citizenship.

We need to return to first principles, and in this boasted nineteenth century, to re-state some of the fundamental maxims of morality. In the words of M. Carlier, "Christianity came and proclaimed a new law, holding that man could not sunder what God had joined together." We may add that in a country which recognizes the Christian code, laws which authorize divorce, except for crime against the marriage relation itself—i. e., adultery—are wrong, pernicious, and a solecism.

Marriage in France is instituted by two separate and distinct ceremonies—the civil contract at the *mairie*, and the religious service at the church. As we understand it, these two elements are in this country combined in a single ceremony, whether that be performed by clergyman or law officer. Now by keeping the religious or moral union distinct in our ideas from the civil contract, it is easy to see that in case of dangerous violence, cruelty, gross intemperance, &c., the latter element may be dissolved, and separation *a mensa et thoro* decreed, while yet

the former relation is suffered to be broken only by the death of either party, or by violation of the seventh commandment, which is itself the death of the moral union. In France and England divorce is procured with great difficulty, even in case of adultery. This is bad, and leads also to the desecration of wedlock.

One more explanation needs to be made. Where one party visits a Western State and obtains a divorce *on grounds unwarranted by morality*, is the other party morally (as he or she can be legally) loosed from the marriage vow and free to marry again? We answer in the affirmative, because the party thus wrongfully procuring the divorce puts himself or herself in a condition to marry again, and thus potentially annihilates the moral union.

The frequency of criminal abortion in the United States is of course largely discussed by M. Carlier; but as he derives his information chiefly from the writings of our own profession here, we need not say more about the subject in this place. It should, however, induce increased efforts to stay this monster evil, to hear our invectives re-echoed from a foreign shore—we should be urged on to hasten the coming of the time when the finger of scorn can, in this respect, no longer be pointed at us.

On one head the patriotism of M. Carlier has led him wide of the mark. He disputes the statement of De Tocqueville that American domestic morality is superior to that of Europe. He argues from the fact that in France the number of divorces for adultery is smaller than in the United States. We think this is easily explained by assuming that French spouses, instead of seeking (what is difficult to get) the *separation de corps*, on account of the intrigues of their partners, revenge themselves in kind. Our author's special pleading on this point will hardly avail, when we remember the great proportion of *mariages de convenance*, with their separate apartments; that there are computed to be in Paris 250,000 women who should be married but are not; and that in that gay Capital the *demi-monde* rivals and jostles the remainder. It may be taken for granted that fidelity to the marriage vow bears a constant relation to the general purity of manners. In this country one legacy from the Puritans has not yet been entirely squandered—a virtue which is something different from the innocence of the French *demoiselle*, kept closely under watch and ward; different from the prudent discretion of her countrywoman of a lower class who may be *sage*. If it be urged that what is there practised openly is here done in secret, it is obvious that the extent of what is concealed cannot be ascertained. And, finally, we quote an aphorism of French origin, that "hypocrisy is the homage which vice renders to virtue." In other words, it requires the presence of virtue to shame vice into hiding itself.

Vaccination and Re-vaccination.—The paper of Dr. Seaverns in this week's JOURNAL would seem to make the remarks by ourselves on the subject, which we had in preparation, superfluous. As Dr. Cotting, however, made a paragraph from this JOURNAL one of the texts of his paper, and closed it with an admonition evidently suggested by it, we feel it our duty to say, that we still hold to our original opinion of the great importance and the imperative duty of re-vaccination. We are willing to rest our opinion upon the two cases published in this JOURNAL: the first, that of a household of more than forty persons, exposed to a case of smallpox, among whom the only two cases of subsequent variolous disease occurred in persons who refused the protection which re-vacci-

nation gave to all the other members (see this JOURNAL, vol. lxxvi. p. 252); and the second, the fact quoted by Dr. Cotting at the head of his article, that a succession of cases occurred in a smaller household, which we assumed must have been the result of neglect of re-vaccination or unwillingness to submit to it.

IN the present number and each of the two previous numbers of the JOURNAL we have been compelled, by the accumulation of material in our hands, to add four pages of reading matter; a gratuity which we hope our readers will duly appreciate.

Theology and Natural Science; their Mutual Relations.—A Lecture by J. H. GLADSTONE, F.R.S.—Dr. Gladstone has endeavored to show in the present lecture how the study of natural science, being the study of one volume which has issued from the Divine Being, prepares the mind for the reception of the truths delivered in the companion volume of God's word. Both are difficult studies, and in many cases wrong interpretations are arrived at; but the fact that the interpretation of the one record, clashes with the apparent meaning of the other, shows not that the original works are inconsistent the one with the other, but that our interpretations in neither case are perfect. All the inspired teachers of religion have drawn lessons from the study of nature, whereas Nature has acted the part of a terrible giant, a destructive Jupiter, or an awful Thor, in the religions that have had no revelation. Science repays the debt by clearing the mind from superstition, by exciting an earnest reverend spirit, by inducing humility of mind, clearness of definition, and calmness of judgment.

The slur cast upon science, that it leads to infidelity, is well rebutted by Dr. Gladstone. He states it as his experience that there are no more irreligious men in the walks of science than in other professions. What a man is before he begins to study, that he remains. The religious man becomes more firmly convinced, the irreligious man gains greater scope for scoffing. Science is not necessarily religious, nor is it the reverse; it may be conducive to either end. Dr. Gladstone has spoken kindly, thoughtfully, and well on one of the questions of the day that touches us not as scientific men, but as *men*, who cannot be indifferent when it is sought to place science in opposition to religion.—*London Chemical News.*

WE extract from the Paris correspondence of the same journal the following items:—

M. Genevoix, struck with the happy effects obtained by the valerianate of ammonia, has combined valerianic acid with other new base. His valerianate of triamyline contains four equivalents of valerianic acid. If the medicinal action depends upon the acid, and not upon the base, the new compound cannot fail to be successful.

Poultices are attended with great inconvenience in consequence of their weight, their cooling, and their more or less disagreeable odor. For the application on the skin of liquid medicaments, laudanum, tincture of iodine, or fatty matters, M. Genevoix proposes an impermeable tissue enclosing a double layer of swan-skin, which is wetted with a decoction of marshmallows, linseed, or poppyheads, and which preserves its temperature for more than twelve hours at 70° C.

Cod-liver oil is now so much used in medicine that it has become a highly important article of commerce.

In this country we are inclined to look with more or less of suspicion upon any name that is connected with a largely advertised medicine. It is impossible to deny that the lustre of one of the most brilliant names in chemical science has been somewhat dimmed, at least in the eyes of the world, by being continually seen attached to jars of a highly nutritive but certainly uninviting-looking preparation in great favor at the present moment with the debilitated and dyspeptic.

This circumstance, although certainly unfair, is absolutely inevitable. There are few, therefore, who read the advertisements of "Dr. De Jongh's light brown cod-liver oil," who are aware that that gentleman (who, from the pertinacious way in which he has been decorated, appears to be a favorite with kingly amateurs of cod-liver oil) published in 1843 a most laborious research on the substance alluded to.

That cod-liver oil is a valuable remedial agent in numerous diseases of a scrofulous type, is now so generally conceded that it would be a waste of time to argue the point. To which of the numerous ingredients detected by De Jongh we ought to attribute the active properties of the oil, is another matter. We need hardly say that the wildest views are entertained on the subject, especially by medical men, whose chemistry, as a general rule, is disgracefully defective. The subject is so important that we shall make no apology for quoting the analyses of the authority we have named. It is true that they show weak points, especially as regards the bile ingredients; the defects, however, are more easy to point out than to remedy, and, at the time the analyses were made, were not so obvious:—

	Brown.	Light Brown.	Pale.
Oleic acid (with gaduine and two other substances)	67.78500	71.75700	74.03300
Margaric acid	16.44500	15.42100	11.75700
Glycerine	9.71100	9.07300	10.17700
Butyric acid	0.15875		0.07436
Acetic acid	0.12506		0.04571
Fellinic acid and cholinic acid, with some margarine, oleine, and bilifulvine	0.29900	0.06200	0.04300
Bilifulvine, bilifellinic acid, and two peculiar substances	0.87600	0.44500	0.26800
A peculiar substance insoluble in alcohol, of 0.968 sp. gr.	0.03800	0.01300	0.00600
A peculiar substance insoluble in water, alcohol, and ether	0.00500	0.00200	0.00100
Iodine	0.02950	0.04060	0.03740
Chlorine and traces of bromine	0.08400	0.15880	0.14880
Phosphoric acid	0.05365	0.07890	0.09135
Sulphuric acid	0.01010	0.08595	0.07100
Phosphorus	0.00754	0.01136	0.02125
Lime	0.08170	0.16780	0.15150
Magnesia	0.00380	0.01230	0.00886
Soda	0.01790	0.06810	0.05540
Iron	traces	—	—
Loss	2.56900	2,60319	3.00943
	100.00000	100.00000	100.00000

It is not remarkable that so many persons should entertain unsound views regarding the causes of the efficacy of cod-liver oil. Dr. De Jongh considers the value of the oil to be derived from the iodine and the elements of the bile. Others have imagined its curative properties to reside in the bromine, others in the phosphorus. It appears to us that these views are sufficiently refuted by the fact that none of the attempts to administer the ingredients of the oil in a separate state have succeeded. It is true that it has been attempted to evade this difficulty by saying that in cod-liver oil the substances alluded to are in a peculiar condition in which they are especially prone to assimilation. There is not the slightest evidence that this is the case. The free phosphorus has had the credit of being the really valuable ingredient. But is it absolutely certain that the phosphorus in cod-liver oil is free? Unless we are mistaken, the evidence for the existence of free phosphorus rests upon the fact that more phosphoric acid is obtained after oxidation of the oil with nitric acid than is obtained by precipitation from the liquid separated from the fatty acids after saponification. We

think the evidence for the existence of free phosphorus requires to be greater than this. But, even assuming the fact, we think it in the highest degree doubtful if cod-liver oil, even if of the most absolutely correct "light brown" tint, possesses any remedial virtues save what are due to the fact of its being a highly digestible fat oil; and we consequently contend that the colored and fœtid oils possess no curative properties that are not found in the carefully prepared and consequently nearly colorless oils—nay more, that the disgusting flavor of the foul fish-oil of commerce, by rendering it more loathsome, in the same ratio renders it more difficult to assimilate.

THE wills of the late Dr. James Jackson and Dr. J. Mason Warren of Boston have recently been filed for probate. Dr. Jackson devised most of his medical books and books on natural history to his son-in-law, Dr. Charles G. Putnam; his other books, maps and engravings to his five children equally; and the bulk of his estate, after deducting some small legacies, to his four daughters in equal parts.—Dr. Warren gave his house on Park street to his wife during her life, together with such a sum of money as added to securities held by her would make $100,000. He left $50,000 in trust for his five children, $5000 to the Medical Benevolent Society of Massachusetts,, and $2000 to the Trustees of the Massachusetts General Hospital as a fund for a prize to be called the Warren Prize in honor of his father. Some other money bequests were made, and his library, surgical instruments, &c., were given to his son, John C. Warren.—*Boston Daily Journal.*

BY the published list of the present members of the North Carolina Medical Society, attached to the Report of the Proceedings at the last Annual Meeting, it appears that the whole number of members is 228; and that of these, 100 graduated at the Medical School of the University of Pennsylvania, 43 at that of the University of New York, and 33 at the Jefferson Medical College, Philadelphia.

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 14th, 1867.

DEATHS.

	Males.	*Females.*	*Total.*
Deaths during the week - - - - - - - - -	50	41	91
Ave. mortality of corresponding weeks for ten years, 1856—1866	48.0	45.8	93.8
Average corrected to increased population - - - - -	00	00	103.42
Deaths of persons above 90 - - - - - - - - -	0	0	0

BOOKS AND PAMPHLETS RECEIVED.—Minutes of the Proceedings of the Fourteenth Annual Meeting of the Medical Society of the State of North Carolina, May 15, 1867.—Spotted or Congestive Fever. By C. B. Coventry, M.D., Utica, N. Y.—Is it I? A Book for every Man: a Companion to Why Not? a Book for every Woman. By Prof. H. R. Storer, of Boston.—Woman's Rights. By Rev. John Todd, D.D.—University of Albany—Historical Sketches of the Medical College, the Law School, and the Dudley Observatory.—Townsend & Adams's (New York) Catalogue of Medical and Scientific Periodicals, Books, Colleges, Drugs and Medicines, Instruments, &c. &c.

DIED,—In West Topsham, Vt., Aug. 27, of consumption, Dr. Levi Burton, aged 63 years.—In Montgomery, Ala., Gustavus A. Nott, M.D., Professor of Materia Medica in the Medical Department of the University of Louisiana.—At Houston, Texas, Dr. Robert J. Breckenridge, during the late war Inspector of Hospitals for the Northern (Confederate) Army of Virginia.

DEATHS IN BOSTON for the week ending Saturday noon, Sept. 14th, 91. Males, 50—Females, 41. Accident, 2—anæmia, 1—apoplexy, 4—bronchitis, 3—cholera infantum, 14—cholera morbus, 3—consumption, 15—convulsions, 1—debility, 3—diarrhœa, 4—diphtheria, 1—dropsy, 1—dropsy of the brain, 1—dysentery, 4—scarlet fever, 5—typhoid fever, 1—gangrene (of lung), 1—disease of the heart, 3—malformation of the heart, 1—hernia, 1—homicide, 1—infantile disease, 2—disease of the kidneys, 1—disease of the liver, 2—congestion of the lungs, 1—inflammation of the lungs, 1—marasmus, 2—old age, 1—paralysis, 4—premature birth, 1—puerperal disease, 1—smallpox, 1—teething, 1—uræmia, 1—unknown, 2.

Under 5 years of age, 39—between 5 and 20 years, 9—between 20 and 40 years, 12—between 40 and 60 years, 19—above 60 years, 12. Born in the United States, 62—Ireland, 19—other places, 9.